



# NEWSLETTER OF THE Z88 USERS' CLUB

SEPTEMBER/OCTOBER 1987

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ABOUT THE Z88 USERS' CLUB

The club is run as a non-profit making spare time activity, funded by the subscriptions from members. The club newsletter is published six times each year, at approximately bi-monthly intervals.

EDITORIAL

Welcome to this, the first issue of Z88 EPROM. My name is Roy Woodward, I am 28 years old and it's me you should blame for starting this club! I work for British Rail Engineering Ltd in Derby providing photographic and video services to the company's Public Affairs department.

I hope you will find this first issue interesting to read, although while reading it you should bear in mind that the whole of this first newsletter has been written by yours truly. This is certainly not the way I see future issues of Z88 EPROM - this is your magazine and as such I hope all members will make some contribution, however small.

All the 'articles' (for want of a better word) in this issue have really arisen as a result of my using the Z88 for about six weeks - as we attract more and more members I expect we will get many questions, points of view, and perhaps even the odd complaint.

The most important thing to remember is that this is your club, and if you have any suggestions about how it should be run, please

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write and say. By the time the next issue is being compiled I hope to have a large pile of contributions to sift through.

### CONTRIBUTIONS TO Z88 EPROM

This is your magazine, and your contributions will be helpful to other members whatever form they take - letters, articles or programs. Your contributions should be sent to:

Z88 Users' Club  
68 Wellington Street  
Long Eaton  
Nottingham  
NG10 4NG

If you would like a personal reply to your letter, please make this clear and if possible enclose an SAE for the reply - postage is so costly to the club.

Hand written contributions should be a maximum of two pages. Longer items should be printed out in the format to fit this A5 newsletter, or they may be sent saved onto EPROM card which will be returned after the file has been copied. Again it would help if you could enclose return postage for the card.

Please put your name, address and membership number on all contributions - in the case of contributions sent on EPROM, head the article with this information.

EPROM ERASURE SERVICE

The club offers this service for members who have not purchased the Z88 EPROM Eraser. If you have EPROM card(s) you want erasing send them to the above address, with the following:

- 1) Return postage. (See below for 128k cards).
- 2) Your name, address and membership number.
- 3) 50p per card service charge. (This may be in the form of a cheque/Postal Order payable to Z88 Users' Club, although for just one card it would be better to send a 50p coin, as this saves on bank administration.)

The best envelope to use for EPROM cards is a very small Jiffy-Lite bag - these can be obtained from most stationers. As a guide a single card can be sent at normal letter postal rates.

**IMPORTANT NOTE 1**

ALL DATA ON THE CARD WILL BE LOST - PLEASE ENSURE THAT YOU HAVE CHECKED THE CARD AND COPIED ANY FILES YOU WISH TO SAVE TO ANOTHER CARD.

**IMPORTANT NOTE 2**

THE Z88 USERS' CLUB CAN ACCEPT NO RESPONSIBILITY FOR CARDS LOST IN THE POST - FOR 128K CARDS YOU MAY WANT TO USE RECORDED DELIVERY SERVICE. IF THIS IS THE CASE THEN PLEASE SEND ENOUGH MONEY TO COVER THE RECORDED DELIVERY CHARGE WHEN THE CARD IS RETURNED.

SOFTWARE LIBRARY

We are keen to establish the club software library. If you have written any programs which may be of interest to other members please send them for inclusion. We are not looking for programming masterpieces here - as long as the program works and does what it is supposed to! Short programs can be sent for inclusion in the newsletter - maximum of about 40 lines please. Any programs which are longer should be sent on EPROM card. Again, please put your name, address and membership number in REM statements at the start of the program, and if the program needs instructions, write these in a PipeDream file on the same EPROM.

Finally it would help if you write a short covering note to accompany the EPROM and write your name on the EPROM label. (I hope all these instructions have not put anyone off (!) but I don't want to lose anybody's EPROMS or not know who to credit for the contribution.) Your EPROM will again be returned as soon as the file has been copied.

Once a few programs are in the library, I will print a list in a future issue of Z88 EPROM, and update this as more programs are added. I will give instructions on how to get copies of the programs when we have something to copy! Programs in the library will generally be free, the only exceptions to this will be where a member has contributed a program to the library which is commercially available elsewhere - the club will then collect a fee for copies of the program and pass these on to the author.

### ROM VERSIONS

My first Z88 (serial no 061-000074, received 30 June) had version 1.2 of the ROM. When I had to return the machine to Cambridge Computer to have a keyboard fault fixed (see later) they very kindly also installed a later version of the ROM - version 1.41.

After another couple of weeks I had my machine replaced, and the new one had version 2.0 installed - presumably this is the version which will go into the shops.

The most obvious improvement over the 1.2 ROM is that the reset button on the left hand side of the machine now causes a 'soft reset' ie. the machine resets but the contents of RAM is unaffected.

This means that if the machine should crash you can safely reset without losing any of your files. A hard reset is still available if you press the reset button while the card access cover at the front of the machine is open.

Another small improvement is in the Filer - when you do a 'fetch from EPROM' and input the source filename, when you press enter the system automatically puts the same filename in as the destination. This default may be altered if you wish, but normally it saves a lot of duplicate typing.

I am sure there are a number of other improvements in the new ROMs, but I have yet to come across them. Perhaps any members who know of other improvements will enlighten us.

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If you have a ROM version other than 1.2 or 1.41 or 2.0, please write and let me know. You access the version number by calling HELP from the INDEX, then cursor left once. You are now looking at a screen with a title line 'The Cambridge Computer Z88 Portable Version x.xx'

### Z88 PROBLEMS

With any new computer, there are inevitably a number of teething troubles which arise as the machine goes into full scale production - these may result from bugs in early versions of software, or from minor hardware problems which require small modifications to be made.

Inevitably, early users of a new machine are going to come across these problems. In the case of a product of such complexity as the Z88 it is impossible to iron out all the bugs before making any quantity of machines. While it is no comfort to the user with problems, I would give two thoughts - one, it is in some ways the price to be paid for being at the 'leading edge' of the technology, and two, you are in the best of company. Virtually every computer ever made has suffered some minor problems at first, from the humble BBC micro to the biggest IBM.

The main thing is that any problems which arise are taken note of by the manufacturer, and rectified at the earliest opportunity.

Since receiving my machine, I have had three problems: At first the 'save to EPROM' command caused a complete system reset (!).

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When I contacted Cambridge Computer they blamed it on a faulty EPROM card, and said they would send a replacement. The following day a new EPROM arrived in the mail (very prompt service - full marks to CC). Unfortunately the new card behaved in exactly the same way as the original one, and further phone calls to CC caused much scratching of heads!

A second replacement card was soon winging its way through the mail. The problem just seemed to cure itself - I was trying to save to EPROM fully expecting the machine to reset, but lo and behold the save worked perfectly. Since then I have had no problems whatsoever with the EPROM storage, despite there being no actual 'cure'. I have since been told that this problem was caused by a code bug in the 1.2 ROM. I hope that my problems were a one off isolated incident, but I would be most interested to hear from other members who may have experienced any similar problems.

The second fault which my computer developed after about three weeks was on the keyboard - some keys did not work at all, while others produced a totally unconnected combination of letters.

The most upsetting feature of the fault was that the two shift keys would not turn the machine on or off - a reset was the only way to switch the Z88 on, which of course resulted in losing all RAM contents! (Thank heaven for the 'soft reset' on later ROMS) Again the phone lines to Cambridge were buzzing, and they diagnosed the problem as a short circuit between two of the keyboard connections.



The only cure would be a replacement keyboard membrane.

Rather than send the machine back (at a postal cost of about a fiver, and no saying what state it would arrive in) I opted to take the machine personally for a 'while you wait' repair. A helpful young man at CC replaced the keyboard with the new semi-matt version, and also upgraded the ROM to version 1.41. Once again, anyone who has experienced keyboard faults please let me know.

My third problem was several further unexplained crashes, and 'Error U' showing on the reset screen. The problem was diagnosed by CC as a hardware fault - one or more of the connections to the 100 leg logic chip had not been properly connected. The machine I was given as a replacement ( on which I am typing this newsletter ) is serial no. 072-000462 with version 2.0 software.

Full marks to Cambridge Computer for their customer relations - at the time of my dealings with them the Users' Club was just a glimmer of an idea in my mind - even so, they were very helpful and courteous at all times.

Sinclair Research seemed to have acquired quite a poor reputation for customer relations (perhaps unfairly) but certainly CC have got off on the right footing. Let us hope that as the company grows and prospers the personal service will remain.

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### Z88 GOES RETAIL

At the time of writing (August) the Z88 is just about to go on sale in all branches of Dixons and Comet. By the time you read this the machine will hopefully be selling in vast quantities around the country!

Seriously the advent of retail sale is important for us all, since it will mean that the accessories will be available in the High Street; RAM & EPROM cards, the EPROM eraser and power supply. It remains to be seen whether the retail outlets will stock the file transfer packs, but given the fact that Dixons are one of the major retailers of the Amstrad PC compatibles this is probably quite likely.

As of 1st June a number of prices of items in the Z88 system have been changed as follows:

Z88 Computer	£249.95 + VAT
32k RAM card	£ 14.95
UV Eraser	£ 39.95

All other prices remain the same.

### Z88 CARRYING CASE

The plastic box the Z88 is supplied in is quite good to use as a protective case at first, but when you no longer wish to carry the manual about for reference it is a bit of a waste of space. The other problem with the box is that there is no room for EPROM cards to be carried with the computer.

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As a result I asked my wife, Karen, to knock up a fabric case for the computer (there is nothing sexist in this last statement - I simply would not know where to start!). The end result is very practical and quite attractive, made from a thick moquette material normally used as a seat covering. This type of material is thick enough to offer some protection to the Z88 but thin enough to machine sew. A simple envelope construction was quite adequate, with a flap at the open edge fastening to the front face with Velcro. At the moment I still do not have anywhere to store my EPROMs, but I am considering modifying the fabric case to include some small pockets each big enough to take one card.

### Z88 RS232 CONNECTIONS

One gaping omission from the First Edition of the otherwise excellent User Guide is the fact that CC do not tell us how to wire up a lead to run a printer from the RS232 port on the right hand side of the machine. This is thankfully put right in the Second Edition in Appendix B.

There should be no problem if your printer will work with the 'standard' RS232 lead which CC will supply for the princely sum of £9.95. Unfortunately in many cases this lead will not work, either because the printer connector is not a 25 way D plug, or the protocol used in the wiring of the lead is incorrect for your particular printer.

This problem really stems from the fact that there has never really been any such thing as

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an RS232 'standard' - each manufacturer has implemented their own version of the interface to suit their printers or computers. The only thing which is 'standard' is that all the signals are there somewhere, it is just a case of linking the correct pins on each of the two connectors. For those of you with First Edition manuals here then are the Z88 pinouts, their function, and the pin they are connected to on the 25 way D plug of the CC lead:

<u>Z88 9 way</u>		<u>25 way</u>
1	Blank	---
2	TX out	3 RX in
3	RX in	2 TX out
4	RTS out	5 CTS in
5	CTS in	20 DTR out
6	Blank	---
7	Ground	7
8	DCD in	20 DTR out
9	+5v	6,8 (DSR, DCD)

Please note that Z88 pins 5 & 8 are both connected to pin 20 on the 25 way.

### KEYBOARD IMPROVEMENTS

The version of the Z88 that is going into the shops has an improved keyboard compared to the one fitted to early machines.

The main problem was the shiny surface finish of the silicon rubber used to mould the keymat - the surface picked up any dust or fluff it came into contact with, leaving the keymat looking more like some sort of hi-tech clothes brush!

In the later version, the rubber has been changed resulting in a keyboard with a matt finish - much better since it does not pick up nearly as much fluff or dust.

If you have an early machine with the shiny keymat it may be worth contacting Cambridge Computer with a view to having a new keymat fitted - assuming that the machine is not faulty they will probably charge a small fee for this service.

### CLEANING THE KEYBOARD

If your keymat is plagued by fluff and dirt, the most effective method I have found is to lick your forefinger and lightly rub it across the keys. It may not sound very nice, but it does appear to work. If any members have any other methods please write in.

UNFAIR CRITICISM OF Z88 KEYBOARD

In many of the early reviews of the new Z88 (most of which were, I believe, based on very short experience of a pre-production machine) some quite unfair comments were levelled at the keyboard - most of these were along the lines of comparing the Z88 keyboard with the rubber mat used on the original ZX Spectrum - the so-called "dead man's flesh" feel etc.

While both machines use a rubber mat for the keytops, that is really where the similarity ends. The old ZX Spectrum key spacing is narrower than the Z88, and the actual size of the keytops on the Spectrum is much smaller. The other improvement with the Z88 is the type of rubber used - it is thinner and more flexible - leading to a much more sensitive keyboard.

To test the user-friendliness of the keyboard, I asked the secretary in my office at work - Georgina, qualified to RSA III - to try a simple speed test on the Z88. George is more used to using an ITL workstation for word processing, so I asked her to first do the test on her 'real' keyboard on the ITL, then to type similar text into the Z88.

The results were interesting to say the least - George managed about 85 words per minute on the real keyboard, and on the Z88 she typed at an average of about 70 w.p.m. - not bad for "dead man's flesh"!

The main thing that makes all this almost irrelevant is the fact that most of the people

who will buy and use a Z88 are not qualified typists - myself included. When you are typing with one or two fingers from each hand it really matters little what type of plastic or rubber the keys are made of !

### USING Ni-Cd BATTERIES

The Z88 seems to give the quoted battery life of about 20 hours active computing. Although this seems quite a long time, I have found myself getting through a set of Duracell alkaline batteries every two weeks. This represents quite a high running cost, these cells costing about £2 a set.

In order to reduce running costs I decided to try the Z88 with rechargeable Ni-Cd cells - the sort used in many flashguns or razors costing about £1.50 each. All seemed well at first, the Z88 performing as normal. Unfortunately after about an hour of computing the 'LOW BAT' warning symbol appeared.

I decided that the battery warning circuitry must be activated by a drop in voltage from the batteries. The Ni-Cd cells give 1.2 volts per cell, compared to 1.5 volts for a normal battery, so for a set of four they give only 4.8 volts rather than 6 volts from normal batteries. This lower voltage must be enough to trigger the battery warning. I have now resigned to using the Z88 mains adapter when I am using the machine for extended periods at home or in the office, restricting battery powered use for computing on the move.

### Z88 EPROM STORAGE

The Z88 is somewhat revolutionary in concept for many reasons, not least for the fact that it uses solid state EPROM cards for mass storage of data files or programs. As far as I am aware, the only other machine to employ this form of storage is the pocket sized Psion Organiser. While not demeaning this machine, which has been extremely succesful in its more specialised market, I think it is fair to class the Z88 as the first 'real' computer to utilise solid state storage.

The theory of solid state storage is a sound one - completely reliable, instant access in a compact package, which cannot be corrupted by stray magnetic fields. In most respects the Z88 EPROM card system fulfils these 'ideals' - The cards are certainly compact, and the system appears to be reliable (the gold plated contacts must help here).

The one area where EPROM storage falls down is cost - because you are buying hardware ie. a circuit board and EPROM chip, the cards are obviously going to be more expensive than floppy disks or similar magnetic media. The cost per byte of storage is astronomical - about 0.04p for a card compared to 0.00047p for a 3.5" floppy holding 720k - in other word about 100 times more expensive!

Having said that, CC's EPROM cards are much cheaper than Psion's storage for the Organiser - a 32k pack costs £34.50 and a 128k pack costs a whopping £99.00! This compares with the Z88 cards at £12.95 and £49.95 respectively.



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The two redeeming features for Z88 storage are:

- 1) Memory chip prices are coming down all the time - as larger devices are perfected the price of the existing chips falls like a lead balloon. I would expect the price of the 128k cards to come down quite considerably when the 1 Megabyte card is readily available.
- 2) The 1M card should be considerably cheaper per byte than the current cards. (0.04p per byte would make it £400 for 1 Meg!) I would guess that Sinclair's target price would be no more than the psychological £100, which should bring 128k cards down to £30 in time.

### Z88 DISK DRIVE?

In the Filer section of the manual there are a number of references to the Filer system being compatible with disk drives should you wish to add one at a later date. I believe Epson manufacture a 3.5" drive which connects through an RS232 serial port.

Maybe it is a coincidence that the Z88 liquid crystal display is bought in by CC from Epson, but I wouldn't be suprised to see the Epson drive sold under the Cambridge Computer badge. On the other hand, CC may leave it to third party suppliers to fill this need.

### HARDWARE REVIEW - Z88 EPROM ERASER

The Z88 EPROM eraser arrived in the post about two weeks after I placed a credit card order with CC. The unit is diminutive in size, a

black box about 3" x 3" x 2", with a mains lead coming out of the back, and a slot in the front to take the EPROM card to be erased. There are no operator controls, only a yellow indicator light on the top of the unit. The overall impression is of a well designed, functional unit.

The Eraser was supplied with two pages of photocopied instructions - quite clearly laid out and self explanatory. I would have preferred to see the instructions typeset and supplied as a small manual, but since my EPROM eraser was one of the first to be despatched it may be that the instructions are to be updated.

Operation of the unit is simplicity itself - simply insert the EPROM card into the slot, with the hole exposing the chip upwards, and the label to the front. The action of inserting the card operates a microswitch inside the unit, which then starts timing a twenty minute erasure cycle. While the unit is erasing the yellow indicator is illuminated, and when this light goes out the card may be removed. The unit does get quite warm while operating, but all this heat is generated by the ultra-violet light source, and is quite normal.

The EPROM eraser has worked quite efficiently - the several cards I have erased were completely blank. It does state in the instructions that the efficiency of the UV light source may reduce with use, the result being only partly erased EPROMS! The remedy is to then give the card a second twenty minute exposure to erase it completely.

FILE TRANSFER

One of the attractions of the Z88 specification when compared to most other laptop machines is the facility to import and export files to other machines. This has two immediate advantages - the user may transfer data files from the Z88 to a desk-top machine or vice-versa, and to avoid complete reliance on RAM or EPROM storage files may be transferred for archival storage on a larger machine.

If any members have used the Cambridge Computer file transfer pack for IBM PC's, I would be interested to know how the system operates and how easy and successful it is.

I understand CC are currently working on a transfer pack to work with the BBC micro ( an obvious choice really, since the machines share BBC BASIC ). A third party supplier, Sector Software, have plans to market transfer software to work with the Sinclair QL.

I would hope that either CC or other companies realise the worth of these transfer packs, and work to expand the machines for which packs are available. I would expect a pack for the ZX Spectrum to be popular, since there must be more Spectrums (in their various guises) in use than any other machine. Any member care to write one?

Z88 BATTERY RATTLE

Both machines I have had rattled if the Z88 was lightly shaken, or sometimes when typing heavily! (Please do not shake your machine

violently.) At first I suspected this was part of the innards of the machine had worked loose and was rattling, but more detailed investigations proved that the rattle was coming from the battery compartment underneath the machine.

The middle two batteries were rattling against the plastic compartment cover. The solution was simple - A small piece of self adhesive foam rubber strip stuck to the inside of the cover. Be careful when choosing your foam not to use any too thick - if the foam is too thick it may be necessary to force the cover to click into place, possibly distorting the case and circuit board of the Z88.

### DIABLO 630/RICOH RP1600 PRINTER DRIVERS

My printer at home is a Ricoh RP1600 daisywheel (used to print this newsletter) which uses the same driver characteristics as the Diablo 630. The Diablo has established something of a standard for the larger daisywheel machines - to the extent that a number of laser printers will emulate the 630.

I have listed below the printer driver details which should work with either machine:

	<u>On String</u>	<u>Off String</u>
Underline	27,69	27,82
Bold	27,87	27,38

End of page: 12

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Allow line feed: YES

Translate character 163  
changes to 27,73,35,27,74

The baud rate and parity ( set on the Panel )  
may vary from printer to printer, but my Ricoh  
is set for 9600 baud and Even parity.

### USERS' CLUB SMALL ADS & SWAPSHOP

If any members have items of hardware or software they no longer need, the club will print short advertisements in the newsletter. These may be for items wanted or for sale. Small ads and swapshop insertions are FREE, subject to the following conditions:

- 1)The items are computer related.
- 2)Items for sale must not be advertised for more than £100.
- 3)Ads are only accepted for this section from private individuals - NO TRADE PLEASE.
- 4)Ads and insertions are no more than 25 words.

### TRADE ADVERTISEMENTS

Trade members are welcome to advertise in Z88 EPROM, at very favourable rates. Your ads will be closely targetted to the Z88 market, since the newsletter is only taken by people using the Z88. As an example, a full A5 page in the newsletter, reproduced from your camera ready artwork already to size, would cost £25 for one insertion. Please send a SAE for full details.

SAVING BATTERY POWER

In order to prolong the life of your Z88 batteries, I would suggest that you refrain from blowing EPROM cards while using the machine with batteries.

This is because the EPROM chips used in the card need a programming voltage of 21 volts in order to write the data to the chip. This voltage is pulsed to the slot to 'blow' the 1's and 0's onto the chip. Because the Z88 is supplied with power at nominally 6 volts, some clever circuitry must be employed to derive the 21 volts needed for programming the EPROM.

I suspect this is the reason CC state that a RAM card in slot 3 uses more power than in slots 1 or 2 - the insertion of a card (RAM or EPROM) into slot 3 presumably energises the circuitry which produces the higher voltage.

The general rule to preserve battery life is to only save to EPROM on battery power when absolutely necessary - use the mains adapter whenever possible.

MEMORY USAGE / MEMORY MAP ?

Have any members worked out the intricacies of the Z88 operating system and PipeDream with regard to their use of available memory?

I have had the Filer giving up with 'No Room' when trying to save a file with 70 odd kbytes of RAM free! I assume this may be something to do with the paging mechanism used in addressing

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the RAM. The Z80 processor used in the Z88 is an 8 bit processor, and only capable of addressing a maximum of 64k at once. I assume the operating system splits the memory map into 16k blocks - 8 blocks of ROM totalling 128k, and 2 blocks of RAM in slot 0 (internal).

The system will then page in blocks of ROM & RAM as they are needed. Perhaps a member somewhere has information on this process.

Another restriction I have noticed is on the number of active jobs allowed - no matter how much RAM is available the system will only allow 5 PipeDreams to be open at once. Attempting to open another gives the 'No Room' report. Similar things have happened when trying to call the Panel, so I assume the operating system must class this as similar to a 'job'. (STOP PRESS: No problem with 2.2 ROM)

### AU REVOIR!

The end of the first newsletter is now here! I hope you have found the content interesting and informative - if not, please write and suggest improvements.

Above all, remember, this is your club, and your newsletter, so send in your contributions in time for the next **Z88 EPROM** - Hopefully this will be sent out mid November.

Regards from your Editor, Roy Woodward.

**\*STOP PRESS\* \*STOP PRESS\* \*STOP PRESS\***

### **2.2 ROM FROZEN**

The final version of the Z88 ROM has been written. Machines going on retail sale from 1st September will contain version 2.2 ROMs - (initially in EPROM, since the actual ROM chips are being manufactured in Japan, and it will be several weeks before they are delivered.)

I now have version 2.2 fitted to my machine, and all seems well - I have not found any bugs yet. Now the software is finalised it paves the way for software houses to begin churning out software for the machine - before an operating system is finalised it is very difficult to know if what you write today will be compatible with tomorrow's operating software.

### **Z88 PARALLEL PRINTER CABLE**

Especially for all you users who already have a printer with a Centronics parallel interface, Cambridge Computer will soon be selling a cable to hook the Z88 up to any standard Centronics printer.

The cable will plug into the Z88 RS232, have a small box of tricks to do the serial-parallel conversion, then plug into your printer. Available hopefully Sept/Oct, I suspect the price will be around the £30-£35 mark.

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